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10/079,906

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Hitoshi Narusawa

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SUITE 700

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WASHINGTON, DC 20005

EXAMINER

MICHALSKI, JUSTIN I

ART UNIT

PAPER NUMBER

2644

DATE MAILED: 02/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 10/079,906 | Applicant(s) NARUSAWA, HITOSHI | |
| | Examiner Justin Michalski | Art Unit 2644 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,3,5 and 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 5 December 1005 have been fully considered but they are not persuasive. Regarding Claim 2, Applicant argues, page 4, lines 23-27 that Terry does not disclose detect a frequency band having a highest energy level of the input acoustic signals. This is not persuasive as Terry discloses spectral analysis and formant extraction 42 and 44 which detect and extract formants which are a highest energy level among frequency bands.

Applicant further argues in paragraph bridging pages 4 and 5 that Kandel does not disclose a variable equalizer. This is not persuasive as Kandel clearly discloses an equalizer with variable gain (Col. 9, lines 5-13). Applicant argues page 5, lines 2-4, that in the present invention the frequency range is amplified by the variable equalizers variable because the frequency band having a highest energy of the input acoustic signal is variable. This is not persuasive, as the limitations of the frequency range being variable are not found in the claims.

Arguments for claims 3 and 5 were similar to claim 1 and therefore not persuasive.

Claims 2, 3, 5, and 7 stand as previously rejected.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Terry et al. (Hereinafter "Terry") (US Patent 5,388,185) in view of Kandel et al. (Hereinafter "Kandel") (US Patent 6,353,671) and further in view of "Speech Recognition System", 1 September 1970, IBM Technical Disclosure Bulletin, Vol. 13, Issue 4, pages 828-831, (Hereinafter "IBM").

Regarding Claim 2, Terry discloses an acoustic processor (Fig. 2), comprising: an input unit into which acoustic signals are input (Analog input 10); a detector detecting a frequency band having a highest energy level among frequency bands comprising the acoustic signals input into the input unit (spectral analysis and formant extraction 42 and 44; Col. 6, lines 41-55). Although Terry discloses increasing the amplification degree at frequencies higher than the first formant to improve speech intelligibility (Col. 6, lines 41-55), Terry does not disclose maintaining the energy level of the acoustic signals substantially constant for frequency bands lower than the first formant or a 6 dB/octave filter. Kandel discloses a processor for increasing speech intelligibility including a amplifier which amplifies also amplifies second formants (i.e. higher frequency bands) without passing the first formant (Col. 9, lines 5-9). Kandel (Fig. 2) discloses a variable frequency response where low frequencies (i.e. lower than first formant) maintained at a constant level to increase speech intelligibility (Col. 5, lines 57-60). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a variable frequency response which maintains energy lower than the first

formant and increase gain higher than the first formant to increase speech intelligibility as taught by Kandel.

Terry/Kandel do not disclose a 6 dB/octave high pass filter characteristic. IBM discloses a speech recognition system which also emphasizes higher formants. IBM discloses a filter shown in drawing B which rises at 6 db/octave to help raise the amplitude of the second format above that of the first formant (Paragraph bridging pages 2 and 3). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a filter of 6 db/octave in order to help raise the second format above the first format (i.e. higher frequency bands) as taught by IBM to increase second formants and increase speech intelligibility

4. Claims 3, 5, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terry et al. (Hereinafter "Terry") (US Patent 5,388,185) in view of Kandel et al. (Hereinafter "Kandel") (US Patent 6,353,671).

Regarding Claim 3, Terry discloses an acoustic processor (Fig. 2), comprising: an input unit into which acoustic signals are input (Analog input 10); a detector detecting a frequency band having a highest energy level among frequency bands comprising the acoustic signals input into the input unit (spectral analysis and formant extraction 42 and 44; Col. 6, lines 41-55). Although Terry discloses increasing the amplification degree at frequencies higher than the first formant to improve speech intelligibility (Col. 6, lines 41-55), Terry does not disclose maintaining the energy level of the acoustic signals substantially constant for frequency bands lower than the first formant or a delay.

Kandel discloses a processor for increasing speech intelligibility including a amplifier which amplifies also amplifies second formants (i.e. higher frequency bands) without passing the first formant (Col. 9, lines 5-9). Kandel (Fig. 2) discloses a variable frequency response where low frequencies (i.e. lower than first formant) maintained at a constant level to increase speech intelligibility (Col. 5, lines 57-60). Kandel further discloses a circuit (122) which will inherently have a delay tot the input acoustic signal to the amplifier (i.e. variable equalizer) 114. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a variable frequency response which maintains energy lower than the first formant and increase gain higher than the first formant to increase speech intelligibility as taught by Kandel.

Regarding Claim 5, Terry discloses an acoustic processor (Fig. 2), comprising: an input unit into which acoustic signals are input (Analog input 10); a detector detecting a frequency band having a highest energy level among frequency bands comprising the acoustic signals input into the input unit (spectral analysis and formant extraction 42 and 44; Col. 6, lines 41-55). Although Terry discloses increasing the amplification degree at frequencies higher than the first formant to improve speech intelligibility (Col. 6, lines 41-55), Terry does not disclose maintaining the energy level of the acoustic signals substantially constant for frequency bands lower than the first formant or a shift in the variable equalizer. Kandel discloses a processor for increasing speech intelligibility including a amplifier which amplifies also amplifies second formants (i.e. higher frequency bands) without passing the first formant (Col. 9, lines 5-9). Kandel (Fig. 2)

discloses a variable frequency response where low frequencies (i.e. lower than first formant) maintained at a constant level to increase speech intelligibility (Col. 5, lines 57-60). Kandel et al. further discloses the rise frequency of the variable equalizer shifts to a low frequency side as the energy level of the input acoustic signals decreases (Figure 2 discloses the frequency decreasing (low frequency side) as the acoustic gain decreases between 360 and 1440 Hz), and the rise frequency of the variable equalizer shifts to a high frequency side as the energy level of the input acoustic signals increases (Figure 2 discloses the frequency increasing (high frequency side) as the acoustic gain increases between 360 and 1440 Hz). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a variable frequency response which maintains energy lower than the first formant and increase gain higher than the first formant to increase speech intelligibility as taught by Kandel.

Regarding Claim 7, it is inherent that the equalizer will have a response time of 5 msec for a signal of (1sec/.005sec) 200 Hz (i.e. high frequency side) and a response time of 10 msec for a signal of (1sec/0.01sec) 100 Hz (i.e. low frequency side) in order to process the audio signals.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Michalski whose telephone number is (571)272-7524. The examiner can normally be reached on M-F 7-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571)272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jm
2/8/06


HUYEN LE
PRIMARY EXAMINER